STEEL SHEET WITH LOW ALUMINUM CONTENT FOR CONTAINERS

ABSTRACT OF THE DISCLOSURE

The present invention provides a process for manufacturing a steel strip with low aluminum content, which includes:

hot-rolling a steel strip including between 0.050 and 0.080% by weight of carbon, between 0.25 and 0.40% by weight of manganese, less than 0.020% by weight of aluminum, and between 0.010 and 0.014% by weight of nitrogen, the remainder being iron and inevitable trace impurities, to form a strip;

subjecting the strip to a first cold-rolling, to produce a cold-rolled strip;

annealing the cold-rolled strip, to form an annealed cold-rolled strip;

optionally, subjecting the annealed cold-rolled strip to a secondary cold-rolling;

wherein the annealing is a continuous annealing comprising:

raising the temperature of the strip to a temperature higher than the temperature of onset of pearlitic transformation Ac_1,

holding the strip above this temperature for a duration of longer than 10 seconds,

rapidly cooling the strip to a temperature below 100°C at a cooling rate in excess of 100°C per second,

thermally treating the strip at a low temperature ranging between 100°C and 300°C for a duration in excess of 10 seconds, and

cooling the strip to room temperature. The present invention also provides a steel sheet with low aluminum content, which includes:

between 0.050 and 0.080% by weight of carbon,

between 0.25 and 0.40% by weight of manganese,

less than 0.020% by weight of aluminum, and

between 0.010 and 0.014% by weight of nitrogen, the remainder being iron and inevitable trace impurities, wherein

when in an aged condition said sheet includes a percentage elongation A% satisfying the relationship:

$$(750 - Rm)/16.5 \leq A\% \leq (850 - Rm)/17.5$$

where Rm is the maximum rupture strength of the steel, expressed in MPa.

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